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EXPLANATION OF STANDARD POTABLE "WATER SUPPLY SERIES" OF ANALYSES

Enclosed are the results of your water analysis. While this is not a complete analysis, the test parameters provide sufficient basic information about the water quality. Bacteriologically your water is classified as either satisfactory or unsatisfactory based on the analysis of total coliform. Chemically your water has been classified as suitable or unsuitable for human consumption, livestock water and lawn and garden irrigation, based on the results of the total dissolved solids, sulfates, nitrate and specific conductance determinations. Recently several other analytes have been added to our standard potable water analysis series. These are pH, carbonate, bicarbonate, chloride, calcium and magnesium. Cation and anion results are reported in milligrams/Liter, which is equivalent to parts per million.

It is important to remember that this analysis series does not determine all possible contaminates, which could effect the water quality for the purposes stated above. Furthermore, one needs to understand that as the mineral content increases, the quality decreases and the LEVEL OF RISK, assumed by the owner or user, increases for its intended purpose.

Explanation of test results for human consumption

Bacteriology - Total Coliform-

Satisfactory - 0 per 100 ml MF, 0/10 per 100 ml MTF or N (negative) per 100 ml PA

Unsatisfactory
1. A positive total coliform result of greater than 0 per 100 ml MF, greater than 0/10 per 100 ml MTF or P (positive) per 100 ml PA.
2. An Invalid Sample, caused by one of the following results:
   a. TNTC - Too numerous to Count
   b. CG - Confluent Growth
   c. HBG - Heavy Bacteria Growth

TNTC, CG or HBG indicate excessive bacterial growth, that may mask the presence of coliform bacteria. Excessive bacterial growth may be due to a contaminated water supply or the sample tested may have been contaminated. Resampling is recommended either before or after sanitization of the well and distribution system. Meanwhile the water should be boiled prior to consumption. When submitting a RE-SAMPLE, please label the sample as a RESAMPLE and supply the lab with the previous result and Lab No.

NOTE: A positive fecal coliform indicates direct sewage contamination.

Total dissolved solids (TDS) by summation

Suitable -1500 milligrams/Liter or less- the EPA has recommended that domestic public water supplies should not contain more than 500 milligrams/Liter. Refer to the section on tolerances.
Unsuitable- greater than 1500 milligrams/Liter

Sulfates

Suitable - 750 milligrams/Liter or less- The EPA recommends 250 milligrams/Liter or less for public water supplies. Refer to the section on tolerances.
Unsuitable - over 750 milligrams/Liter - It should be noted that high levels of sulfate appear to have no physiological action other than a laxative effect towards new users. Much of the ground water in Wyoming is high in sulfates and has been used for years with no adverse effects.

Nitrates + Nitrites as N

Suitable - 10 milligrams/Liter or less - The maximum level allowed in public water supplies by the EPA is 10 milligrams/Liter. This standard is based on the effects of nitrate on infants whose formula is made from the water. Adults can generally tolerate much higher levels. Refer to the section on tolerances.
Unsuitable - Over 10 milligrams/Liter

Hardness - Calcium and Magnesium expressed as Calcium Carbonate

These analytes do not usually effect the quality of drinking water adversely; however, high levels of hardness may have detrimental effects on plumbing materials, fixtures and appliances such as hot water tanks.

0 - 49 milligrams/Liter - Soft
50 - 149 milligrams/Liter - Medium hard
150 - 249 milligrams/Liter - Hard
250 - 299 milligrams/Liter - Very hard
300 milligrams/Liter and over - Extremely hard

Treatment systems for softening water are commercially available, but it should be noted that this process replaces calcium and magnesium with an equivalent amount of sodium. In our NEW report, hardness is reported in both milligrams/Liter and grains/gallon.

Fluoride - Less than 2.0 milligrams/Liter

Sodium - (for your information)

The EPA recommends a maximum sodium level of 20 milligrams/Liter for people on low sodium diets or who have high blood pressure or heart trouble. It has been reported that good quality drinking water may contain up to 115 milligrams/Liter sodium.

Other analytes and general information

The following data is provided for your information. This data is NOT a recommendation, requirement or legal standard for water used for human consumption. This information is presented so you have a basis of comparison. If the results of your water analysis are higher than the values listed herein, it does not imply the water is unsuitable for human consumption. It should be remembered, as the concentration of these constituents increase the quality of the water decreases.

GOOD QUALITY DRINKING WATER FOR HUMAN CONSUMPTION

The water should contain less than the following concentration or be within the range.

Calcium and Magnesium expressed as Calcium Carbonate (Hardness)	200 mg/L
Sodium	20 mg/L
TDS (Summation)	500 mg/L
pH	6.5 - 8.5 Units
Carbonate & bicarbonate alkalinity expressed as Calcium Carbonate	165 mg/L
Chloride	250 mg/L
Fluoride (Range for good dental health)	0.7 to 1.2 mg/L
Nitrates as N	10 mg/L
Sulfate	250 mg/L

Metals

The laboratory determines copper, iron, lead, manganese and zinc, five basic plumbing metals, when the development series is requested. These metals are also naturally occurring and may be present in your water supply, thus they can create taste, health and staining problems. The following are recommended maximum concentrations for drinking water.

Copper	1.3 milligrams/Liter
Iron	0.3 milligrams/Liter
Lead	0.005 milligrams/Liter
Manganese	0.05 milligrams/Liter
Zinc	5.0 milligrams/Liter

Explanation of test results for livestock use

It is generally agreed that livestock can tolerate a higher concentration of minerals in their drinking water than humans can.It has also been demonstrated that certain species of livestock can tolerate up to 12,000 milligrams/Liter Total Dissolved Solids; however, this is not a good situation and it takes a long time to increase an animal's tolerance to water of high salinity. Sudden changes from good quality livestock water to poor, high salinity livestock water may prove fatal to the animals.
Good quality livestock water should meet the following criteria:

Total dissolved solids -	≤ 1000 milligrams/Liter
Hardness -	≤ 1000 milligrams/Liter
Sulfates -	≤ 500 milligrams/Liter
Nitrates as N -	≤ 10 milligrams/Liter
Sodium -	≤ 500 milligrams/Liter

For the purpose of classification ONLY the following parameters are used.

Total Dissolved Solids

Suitable - 5000 milligrams/Liter or less
Unsuitable- over 5000 milligrams/Liter

Sulfates

Suitable - 1000 milligrams/Liter or less
Unsuitable - over 1000 milligrams/Liter

Sodium

For your information, it has been suggested that the maximum amount of sodium livestock can tolerate is 2000 milligrams/Liter.

Explanation of test results for lawn and garden irrigation

Specific Conductance - micro mhos per cm.

Suitable - under most conditions - less than 1500
Unsuitable - under most conditions - greater than 1500*

Sodium Absorption Ratio - (SAR)
Suitable - SAR less than 10
Unsuitable - SAR greater than 10

*If this water is to be used for lawn and garden irrigation, we would recommend a complete irrigation analysis, which requires one (1) quart of water and costs $40.00.

Information Sources

(1) U. S. Environmental Protection Agency regulations relating to the Safe Drinking Water Act
(2) Water Quality Criteria, Publication A-3, California State Water Resources Control Board, 7/78

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